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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
|-----------------|-------------|----------------------|---------------------|
| 09/426,644 | 10/25/99 | MOON | J 1349.1022/MD |

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QM22/0619

EXAMINER

TUGBANG, D

ART UNIT

PAPER NUMBER

3729

DATE MAILED:

06/19/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trad marks

Office Action Summary

Application No.

09/426,644

Applicant(s)

MOON ET AL.

Examiner

Dexter Tugbang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 April 2001.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,13-17,19,21,23,24,27,30,31 and 37-47 is/are pending in the application.
- 4a) Of the above claim(s) 37,39,41,43 and 46 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-16,21 and 24 is/are allowed.
- 6) ☒ Claim(s) 1,2,17,19,23,27,30,31,38,40,42,44,45 and 47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. The Applicant(s) Amendment filed 4/4/01 (in Paper No. 11) has been fully considered and made of record.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Election/Restrictions

3. Newly submitted Claims 37, 39, 41, 43, and 46 are drawn directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Each of Claims 37, 39, 41, 43, and 46 are drawn to non-elected invention of Species C, the nozzle part, as stated in the Election of Species requirement of Paper No. 6.

Since applicant has received an action on the merits for the originally presented invention, i.e. Species A, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, Claims 37, 39, 41, 43, and 46 have been withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 102

4. Claims 1, 2, 31, 44, 45 and 47 are rejected under 35 U.S.C. 102(a) as being anticipated by the Applicants Admitted Prior Art (AAPA).

The AAPA, as described in the *Background of the Invention* (specification, pages 1-3) and Prior Art Figures 1 and 2, discloses the claimed manufacturing process comprising: forming a nozzle part 30 having electrodes 13 and heating elements 14 on a silicon wafer 11; forming driving fluid barriers 15 and driving fluid chambers 33; and adhering a membrane 20 to the nozzle part and a heat driving part 10 thereby forming a fluid jetting apparatus. The completed fluid jetting apparatus is split, or sectioned, to be supplied into another fluid jetting apparatus.

With respect to the "spinning process", this limitation is broadly read as the conventional roll method (shown in Prior Art Fig. 2) since the feeding reel 51 and take up reel 52 are rolling or spinning.

Claim Rejections - 35 USC § 103

5. Claims 17, 19 and 40 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Leban 5,229,785.

Leban discloses the claimed manufacturing method comprising: forming a nozzle part on a wafer (dummy substrate 10); adhering the nozzle part with the wafer to a membrane (layer 12); removing the wafer from the nozzle part (see Fig. 1H); adhering the membrane to a heat driving part (heater element 36); forming a nozzle plate 14 on a first substrate 34 in which both of the elements constitute the nozzle part; forming jetting fluid barriers (layer 22) on the nozzle plate; forming jetting fluid chambers 32 within the jetting fluid barriers; forming a first reinforcement element (additional layer 52 shown in the embodiment of Fig. 3C); and forming nozzles 20 in the nozzle plate. The "spinning process" is broadly read as the nozzle plate 14 of the nozzle part being formed by a coating technique of spinning or spraying (discussed at col. 4, lines 56-61).

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The act of removing the wafer from the nozzle plate also splits, or separates the fluid jet apparatus to form multiple fluid jet apparatuses.

With regards to the wafer being of a "silicon" material or a "silicon wafer", this material limitation is not considered to be patentably further limiting as to the claimed manufacturing process. However, if the Applicants believe that a "silicon wafer" is patentably further limiting, then forming the wafer material of Leban with silicon would have been obvious to one of ordinary skill in the art at the time the invention was made, since it is conventional, old and notoriously well known in the electrical manufacturing arts to form wafer material of silicon or of a silicon material composition.

6. Claims 17, 23, 27, 30, 40 and 42 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Pan 4,894,664 in view of Leban.

Pan discloses the claimed manufacturing method comprising: forming a nozzle part on a first substrate of a dielectric wafer (slab 56); forming a membrane (beam 12) on a second substrate of silicon wafer (insulating layer 21); forming a heat driving part by forming electrodes (conductive layers 27) and heat elements (resistors 21) on a third substrate of silicon wafer 10; adhering the nozzle part to the membrane and the membrane to the heat driving part (result shown in Fig. 3); removing the first dielectric wafer (discussed at col. 4, lines 5-12); and forming driving fluid barriers (layer 40) and driving fluid chambers (open areas between beams 12 in Fig. 3). The act of removing the first dielectric wafer also allows the fluid jet apparatus to be split, or separated, in forming multiple fluid jet apparatuses.

With regards to the first substrate wafer being of a "silicon" material or a "silicon wafer", this material limitation is not considered to be patentably further limiting as to the claimed

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manufacturing process. However, if the Applicants believe that a "silicon wafer" is patentably further limiting, then forming the wafer material of Pan with silicon would have been obvious to one of ordinary skill in the art at the time the invention was made, since it is conventional, old and notoriously well known in the electrical manufacturing arts to form wafer material of silicon or of a silicon material composition.

Pan does not teach that the nozzle part is formed by a spinning process.

Leban teaches that patterning layers of dielectric material can be achieved by a spinning or spraying process to form a desired material thickness (discussed at col. 4, lines 56-62).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have formed the nozzle part of Pan, with the spinning process of Leban, to positively form a nozzle part with a desired material thickness and pattern.

Response to Arguments

7. Applicant's arguments filed 4/4/01 have been fully considered but they are not persuasive.

Applicants believe that the manufacturing processes of the AAPA, Leban, and Pan, each do not teach forming a plurality of *fluid jetting apparatuses*. The Examiner most respectfully disagrees. It is inherent that the above prior art processes in the electrical manufacturing arts are to manufacture *more than one fluid jet apparatus*, i.e. fluid jet apparatuses. The prior art processes are not limited to forming just one, single, fluid jet apparatus, but a plurality of fluid jet apparatuses as each addresses the problems associated with improving the overall manufacturing of fluid jet apparatuses.

Allowable Subject Matter

8. Claims 13-16, 21 and 24 are allowed. It is noted that Claims 14-16, drawn to the non-elected invention in the previous Office Action, have been rejoined with generic Claim 13.

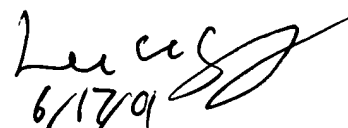
Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dexter Tugbang whose telephone number is (703) 308-7599.

adt
June 15, 2001



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